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Indian Standard

SPECIFICATION FOR DEHYDRATED CABBAGE

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard

SPECIFICATION FOR DEHYDRATED CABBAGE

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AMENDMENT NO. 1 MAY 1996
TO
IS 4627 : 1968 SPECIFICATION FOR DEHYDRATED CABBAGE

(*Page* 3, *clause* **0.4**) — Insert the following new clause after **0.4** and renumber the subsequent clause:

'**0.5** A scheme for labelling environment friendly products known as ECO-Mark has been introduced at the instance of the Ministry of Environment and Forests (MEF), Government of India. The ECO-Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act,* 1986 as per the Resolution No. 71 dated 20 February 1991 and Resolution No. 425 dated 28 October 1992 published in the Gazette of the Government of India. For a product to be eligible for marking with the ECO-Mark it shall also carry the Standard Mark of BIS for quality besides meeting additional environment friendly (EF) requirements. The environment friendly requirements for dehydrated cabbage are, therefore, included through Amendment No. 1 to this standard.

This amendment is based on the Gazette Notification No. 624 (E) dated 6 September 1995 for Labelling Beverages, Infant Foods, Processed Fruits and Vegetable Products as environment friendly, published in the Gazette of the Government of India.'

(*Page* 4, *clause* **3.2.5**) — Insert the following new matter after **3.2.5**:

"**3.3 Additional Requirements for ECO-Mark**

3.3.1 *General Requirements*

3.3.1.1 The product shall conform to the requirements prescribed under **3.1** to **3.2.5.**

3.3.1.2 The manufacturer shall produce the consent clearance as per the provisions of *Water (PCP) Act,* 1974, *Water (PCP) Cess Act,* 1977 and *Air (PCP) Act,* 1981 along with the authorization if required under *Environment (Protection) Act,* 1986 and the Rules made thereunder to the Bureau of Indian Standards while applying for the ECO-Mark and the product shall also be in accordance with the *Prevention of Food Adulteration Act,* 1954 and the Rules made thereunder. Additionally, FPO 1955 (Fruit Product Order) framed under *Essential Commodities Act,* 1955, *Standards of Weights and Measures Act,* 1977 requirements wherever applicable has to be complied with.

3.3.1.3 The product/packaging may also display in brief the criteria based on which the product has been labelled environment friendly.

3.3.1.4 The material used for product/packing shall be recyclable or biodegradable.

3.3.1.5 The date of manufacture and date of expiry shall be declared on the product/package by the manufacturer.

3.3.1.6 The product shall be microbiologically safe when tested as per IS 5403 : 1969 'Method for yeast and mould count of foodstuffs' and IS 5887 (Part 5) : 1976 'Methods for detection of bacteria responsible for food poisoning : Part 5 Isolation, identification and enumeration of *Vibrio Cholerae* and *Vibrio Parahaemolyticus* (*first revision*)' and shall be free from bacterial and fungal toxins.

3.3.1.7 The pesticide residues, if any in the product shall not exceed the limit as prescribed in *PFA Act*, 1954 and the Rules made thereunder.

3.3.1.8 The product/package or leaflet accompanying it may display instructions of proper use, storage and transport (including refrigeration temperature compliance) so as to maximize the product performance, safety and minimize wastage.

3.3.2 *Specific Requirements*

3.3.2.1 The product shall not contain any of the heavy metal contaminants in excess of the quantities prescribed in Table 2.

TABLE 2 LIMITS FOR HEAVY METALS

Sl No.	Metals	Limits	Test Method, Ref to IS 2860:1964*
i)	Arsenic, mg/kg, *Max*	1	13
ii)	Lead, mg/kg, *Max*	5	14
iii)	Copper, mg/kg, *Max*	30	15
iv)	Zinc, mg/kg, *Max*	19	16
v)	Tin, mg/kg, *Max*	250	17

*Methods of sampling and test for processed fruits and vegetables.

"

(*Page* 5, *clause* **4.2.1**) — Insert the following clause after **4.2.1**:

'**4.3 ECO-Mark**

The product may also be marked with the ECO-Mark, the details of which may be obtained from the Bureau of Indian Standards.'

(FAD 10)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 SEPTEMBER 2006
TO
IS 4627 : 1968 SPECIFICATION FOR DEHYDRATED CABBAGE

(*Page* 11, *Table* 2) – Substitute 'Table 3' *for* 'Table 2'.

(FAD 10)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR DEHYDRATED CABBAGE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 May 1968, after the draft finalized by the Fruits and Vegetables Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Dehydrated vegetables in various forms are being increasingly used in off season as they retain their culinary quality and palatability. The dehydrated vegetables are also used by the military in sizable proportions for their near to the natural taste besides saving on transportation and ease in storage at different altitudes. Dehydrated cabbage gives a consistent taste and flavour and also can be used in convenience foods. Since they are gaining popularity, this standard is expected to help the industry in exercising proper quality control.

0.3 Dehydrated cabbage is prepared from clean, sound and fresh heads of appropriate maturity and of suitable varieties of cabbage by properly trimming, washing, coring, cutting into shreds, blanching, sulphiting and dehydrating in a manner which ensures effective preservation of the colour, flavour, texture, taste and food value.

0.4 In the preparation of this standard, due consideration has been given to the provisions of the Prevention of Food Adulteration Act, 1954 and the Rules framed thereunder, and the Fruit Products Order, 1955. However, this standard is subject to the restrictions imposed under these, wherever applicable.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for dehydrated cabbage.

*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definition shall apply.

2.1 Rehydration Ratio — Ratio of the weight of the dehydrated material after cooking and draining of excess water, to its weight before cooking.

3. REQUIREMENTS

3.1 Raw Material — Dehydrated cabbage shall be prepared from clean, sound and fresh heads of appropriate maturity of suitable variety of cabbage (*Brassica oleracea* L. var. *capitata* L.) free from any damage caused by insects, disease, etc.

3.2 Requirements of the End Product

3.2.1 Dehydrated cabbage shall have a white or pale green colour and shall be free from any added colouring matter. The odour of the dehydrated cabbage shall be characteristic of fresh cabbage and shall be free from musty or other objectionable flavours or odours.

3.2.2 The dehydrated cabbage shall be free from any discolouration, grit and any other foreign matter. The proportion of material that passes through 2·0 mm IS Sieve (*see* IS : 460-1960*) shall be not more than 10 percent by weight.

3.2.3 Dehydrated cabbage shall be free from moulds, insect infestation and rodent excreta.

3.2.4 Dehydrated cabbage shall also conform to the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR DEHYDRATED CABBAGE

Sl No.	Characteristic	Requirement	Method of Test, Ref to Appendix
(1)	(2)	(3)	(4)
i)	Moisture, percent by weight, *Max*	6·0	A
ii)	Sulphur dioxide, ppm, *Max*	2 000	B
iii)	Peroxidase test	Negative	C
iv)	Rehydration ratio, *Min*	5·0 : 1·0	D

3.2.5 *Reconstitution* — Dehydrated cabbage when cooked by adding one part by weight of the dehydrated cabbage to 10 parts by weight of one percent sodium chloride solution and boiling for 15 minutes shall reconstitute to a tender crisp product free from toughness and mushiness having a typical flavour and colour of cooked cabbage.

*Specification for test sieves (*revised*).

4. PACKING AND MARKING

4.1 Packing — Dehydrated cabbage shall be packed in clean, sound and moisture-proof containers made of tinplate, laminated foils or any suitable material which would prevent the uptake of moisture by the dehydrated cabbage.

4.2 Marking — Each container shall be marked or labelled with the following particulars:

a) Name of the material,
b) Name and address of the manufacturer,
c) Net weight,
d) Declaration to the effect that permitted preservatives have been used,
e) Batch or code number indicating the date of manufacture, and
f) Manufacturer's licence number.

4.2.1 Each container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING

5.1 Representative samples of the material for testing conformity to this standard shall be drawn according to the method given in Appendix E.

6. TESTS

6.1 Tests shall be carried out as prescribed in the relevant appendices specified in col 4 of Table 1.

APPENDIX A

[*Table* 1, *Item* (i)]

DETERMINATION OF MOISTURE

A-1. PREPARATION OF THE SAMPLE

A-1.1 Grind about 10 g of the sample so that it passes through 250-micron IS Sieve (aperture 0·250 mm). If 250-micron IS Sieve is not available,

use ASA Test Sieve 250μ (same as the ASTM Test Sieve) or BS Test Sieve 60 or Tyler Test Sieve 60 (*see* IS : 460-1962*). Transfer this prepared sample to a well-stoppered glass bottle. Use this material for analysis.

A-2. PROCEDURE

A-2.1 Weigh accurately about 5 g of the ground material (*see* **A-1.1**) in a tared dish having a diameter of at least 5 cm and depth of about 2 cm. Shake the dish until the contents are evenly distributed. Place the dish in an air-oven maintained at 105° ± 2°C and dry for at least 2 hours. Cool in a desiccator and weigh. Repeat the process of heating, cooling and weighing until the difference between two successive weighings is less than 1 mg. Note the lowest weight.

A-3. CALCULATION

A-3.1 Moisture, percent by weight $= \frac{100\ (W_1 - W_2)}{W_1 - W}$

where

W_1 = weight in g of the dish with the material before drying,

W_2 = weight in g of the dish with the dried material, and

W = weight in g of the empty dish.

APPENDIX B

[*Table* 1, *Item* (ii)]

DETERMINATION OF SULPHUR DIOXIDE

B-1. APPARATUS

B-1.1 The apparatus, assembled as shown in Fig. 1, may be used. The apparatus consists of a round-bottom resistance glass flask of 750-ml capacity fitted with a three-holed rubber stopper *D*. The rubber stopper *D* is fitted with the delivery tube *B*, the dropping funnel *E* and the sloping, water-cooled reflux condenser *F* the lower end of which is cut off at an angle. The free end of the delivery tube *B* is connected to the wash bottle *A* containing sodium carbonate solution. The upper end of the reflux condenser *F* is connected to the delivery tube *H* by the rubber stopper *G*. The free end of the delivery tube *H* nearly reaches the bottom of the 100-ml Erlenmeyer flask *J* containing 25 ml of hydrogen peroxide solution. The Erlenmeyer flask *J* is provided with a two-holed rubber stopper; through one hole passes the delivery tube *H* and, through the other, tube *K*. The free end of the tube *K* is connected to the Peligot tube *L* containing 5 ml of hydrogen peroxide solution.

*Specification for test sieves (*revised*).

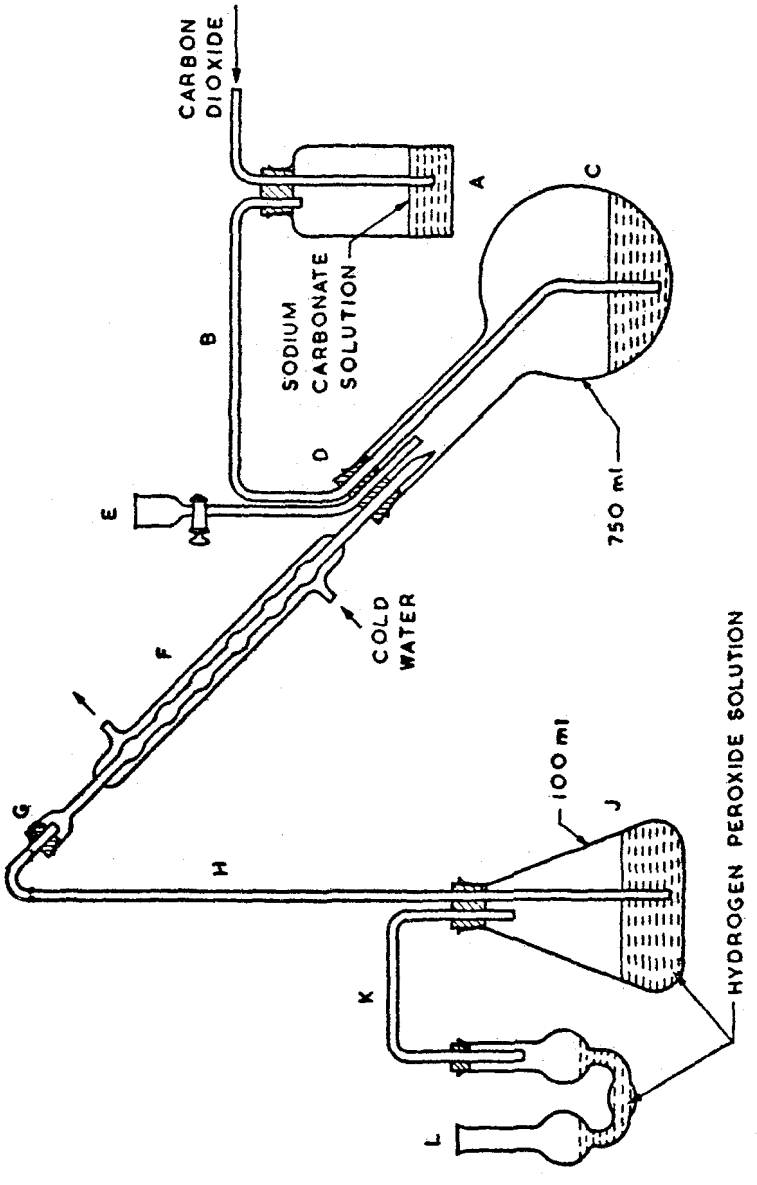

FIG. 1 ASSEMBLY OF APPARATUS FOR THE DETERMINATION OF SULPHUR DIOXIDE

B-2. REAGENTS

B-2.1 Sodium Carbonate Solution — 10 percent (*w/v*), aqueous.

B-2.2 Bromophenol Blue Indicator Solution — Dissolve 0·1 g of bromophenol blue in 3·0 ml of 0·05 N sodium hydroxide solution and 5 ml of ethyl alcohol (90 percent by volume) by warming gently. Make up the volume of the solution with ethyl alcohol (20 percent by volume) to 250 ml in a graduated flask.

B-2.3 Hydrogen Peroxide Solution — Dilute a 30 percent (*w/v*) hydrogen peroxide solution with about twice its volume of water and neutralize the free sulphuric acid that may be present in the hydrogen peroxide solution with barium hydroxide solution, using bromophenol blue indicator solution. Allow the precipitate of barium sulphate to settle, filter and determine the concentration of hydrogen peroxide in the filtrate by titrating it with standard potassium permanganate solution. Dilute the filtrate with cold water so as to obtain a 3 percent (*w/v*) solution of hydrogen peroxide.

B-2.4 Concentrated Hydrochloric Acid — sp gr 1·16 (conforming to IS:265-1962*).

B-2.5 Carbon Dioxide Gas — from a cylinder.

B-2.6 Standard Sodium Hydroxide Solution — 0·1 N standardized at the time of the experiment, using bromophenol blue indicator solution.

B-3. PROCEDURE

B-3.1 With 25 ml of hydrogen peroxide solution in the Erlenmeyer flask *J* and 5 ml in the Peligot tube *L* assemble the apparatus as shown in Fig 1. Introduce into the flask *C*, 300 ml of water and 20 ml of concentrated hydrochloric acid through the dropping funnel *E*. Run a steady current of cold water through the condenser *F*. To expel air from the system, boil the mixture contained in the flask *C* for a short time in a current of carbon dioxide gas previously passed through the wash bottle *A*. Weigh accurately about 25 g of the material and dissolve it in the minimum quantity of water. Introduce this solution into the flask *C* through the dropping funnel *E*. Wash the dropping funnel with a small quantity of water and run the washing into the flask *C*. Distil the mixture contained in the flask *C* in a slow current of carbon dioxide gas (passed previously through the wash bottle *A*) for one hour. Just before the end of the distillation, stop the flow of water in the condenser. (This causes the condenser to become hot and drives off the residual traces of sulphur dioxide retained in the condenser.) When the delivery tube *H*, just above the Erlenmeyer flask *J*, becomes hot to touch, disconnect the stopper *G* immediately. Wash the delivery tube *H* and the contents of the Peligot tube *L* with water into the Erlenmeyer flask *J*. Cool the contents of the Erlenmeyer flask to room

*Specification for hydrochloric acid (*revised*).

temperature, add a few drops of bromophenol blue indicator solution and titrate with the standard sodium hydroxide solution. (Bromophenol blue is unaffected by carbon dioxide and gives a distinct colour change in cold hydrogen peroxide solution.)

B-3.2 Carry out a blank determination, using 20 ml of concentrated hydrochloric acid diluted with 300 ml of water.

B-4. CALCULATION

B-4.1 Sulphur dioxide content of the

$$\text{material, parts per million} = \frac{32\,000\,(V - v)\,\mathcal{N}}{W}$$

where

V = volume in ml of the standard sodium hydroxide solution required for the test with the material,

v = volume in ml of the standard sodium hydroxide solution required for the blank determination,

$\mathcal{N}$ = normality of the standard sodium hydroxide solution, and

W = weight in g of the material taken for the test.

APPENDIX C

[*Table* 1, *Item* (iii)]

PEROXIDASE TEST

C-1. REAGENTS

C-1.1 Guaiacol Solution — One percent, prepared by dissolving 1 gram or 0·9 ml guaiacol in 50 ml ethyl alcohol and adding 50 ml water.

C-1.2 Hydrogen Peroxide — one percent. Dilute one part three percent, hydrogen peroxide with two parts of water.

C-2. PROCEDURE

C-2.1 Take 25 g of the material and coarsely powder it. Place the material on a white porcelain saucer or evaporating dish. Add enough guaiacol solution to wet all the cut surfaces, then immediately add a similar amount of hydrogen peroxide solution. At the end of three minutes note whether a reddish-brown colour has developed. If none is observed the test for peroxidase is negative. Neglect any colour that may develop after 3 minutes.

APPENDIX D

[*Table* 1, *Item* (iv)]

DETERMINATION OF REHYDRATION RATIO

D-1. PROCEDURE

D-1.1 Cook in a beaker one part by weight of dehydrated cabbage in ten parts by weight of one percent sodium chloride solution for 5 minutes and then allow them to cool at room temperature for 45 minutes. Drain off excess solution by covering the beaker with watch glass with convex surface and inverting the container for five minutes. Weigh cooled material.

D-2. CALCULATION

D-2.1 Rehydration Ratio = $WR : WD$

where

WR = weight of reconstituted dehydrated cabbage, and

WD = weight of dehydrated material before cooking.

APPENDIX E

(*Clause* 5.1)

SAMPLING OF DEHYDRATED CABBAGE

E-1. GENERAL REQUIREMENTS OF SAMPLING

E-1.0 In drawing and handling test samples, care shall be taken that the properties of the sample and the material being sampled are not affected. The following precautions and directions shall be observed.

E-1.1 Samples shall be taken in a place where samples have protection against extraneous strains and pressures.

E-1.2 Sampling shall be done by a person agreed to between the purchaser and the vendor and, if desired by any one of them, in the presence of the purchaser (or his representative) and the vendor (or his representative).

E-2. SCALE OF SAMPLING

E-2.1 Lot — In any consignment, all the containers containing material of the same type shall constitute a lot.

E-2.1.1 Samples shall be examined from each lot separately for ascertaining the conformity of the material.

E-2.2 Selection of Sample — The number of containers to be selected from a lot for drawing the samples shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

TABLE 2 SCALE OF SAMPLING

No. of Containers in the Lot	No. of Containers to be Selected
(1)	(2)
Up to 200	6
201 ,, 300	8
301 ,, 500	10
501 ,, 800	12
801 ,, 1 300	14

E-2.2.1 The containers shall be chosen at random from the lot and for this purpose some random number table shall be used. In case such a table is not available, the following procedure shall be adopted:

Arrange all the containers in a systematic manner and count them as 1, 2, 3, ..., etc upto r and so on. Every rth container so counted shall be withdrawn, r being the integral part of N/n, where N is the total number of containers in the lot, and n number of containers to be chosen.

E-3. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

E-3.1 Each container selected according to **E-2.2** shall be tested individually for all the requirements as laid down in the respective specifications.

E-3.2 The lot shall be declared as conforming to the respective specification when each of the container (**E-2.2**) tested individually satisfies the requirements given in **3**.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	1 N = 1 $kg.m/s^2$
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V_s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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